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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

| | | |
|--------------------------|---|----------------------|
| In re Application of: |) | |
| JEAN-YVES CHENARD et al. |) | |
| Serial No.: 07/870,759 |) | Group Art Unit: 1511 |
| Filed: April 20, 1992 |) | Examiner: V. Hoke |
| For: IMPROVEMENT IN THE |) | |
| STABILIZATION OF VINYL |) | |
| HALIDE POLYMERS |) | |

BRIEF ON APPEAL

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Attorney Docket No. 03203-0006-03000

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| STABILIZATION OF VINYL |) | |
| HALIDE POLYMERS |) | |

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

BRIEF ON APPEAL

Under the provisions of 37 C.F.R. § 1.192, the Appellants appeal to the Board of Appeals from the rejections of the Examiner dated September 13, 1993. The Appellants submit their Brief on Appeal, two additional copies, and the required fee of \$270.00.

The Appellants have extended the period for filing this brief three months by the petition for extension of time and fee, which accompany this brief. If there are any other fees due in connection with the filing of this Brief, please charge them to Deposit Account No. 06-0916. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, the Appellants now request that extension, and the required fee should also be charged to Deposit Account 06/0916.

I. STATUS OF CLAIMS

A. Pending Claims

The Examiner finally rejected pending claims 176-183, 193-198, 200-207, 209-217, 219-225, 227-233, 237-323. They now form the subject matter of this appeal. These claims appear in Exhibit 1 of the Appendix. During the prosecution, the Appellants cancelled claims 1-175, 184-192, 199, 208, 218, 226, and 234-236.

B. Procedural History

The prosecution for this patent began on August 28, 1979, when the Appellants filed Serial No. 06/070,503, referred to in this brief as the "original application" and appearing in the Appendix as Exhibit 2. The current application is a continuation of Serial No. 07/633,187, which is a continuation of Serial No. 07/273,669, which is a continuation of Serial No. 06/254,313, filed April 15, 1981, which, in turn, is a continuation-in-part of the original application. The Appellants also claim priority under 35 U.S.C. § 119 of French Application No. 78 24863, filed August 29, 1978.^{1/}

II. STATUS OF AMENDMENTS

No amendments were filed after final rejection.

^{1/} Th original application is an English translation of the French application. Although Appellants are also entitled to rely on the filing date of the French priority document, to simplify this brief, they will only discuss the original application.

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III. SUMMARY OF INVENTION

Prior to August 28, 1979 the Appellants discovered how to improve the production of certain polymers called halogeno-vinyl resins. By adding a different type of monocarboxylic acid, not used by the art of that day, to the various metal stabilizers used in producing these polymers, the Appellants showed dramatic improvements in the stabilization of the polymers. More specifically, the Appellants discovered that by adding this different type of acid to conventional tin stabilizers, the stabilizers, in turn, produced halogeno-vinyl resins that are markedly more resistant to heat and markedly more stable to light. (Specification, p. 1, lines 1-10.)^{2/}

At the time of the invention, artisans were well aware of the use of tin compounds as stabilizers of these resins. (Specification, p. 1, lines 19-21.) At that time, various people had tried to improve the performance of these compounds by combining them with various organic additives; but these attempts had the distinct disadvantages of producing an insufficient efficiency, strong odors, and a high cost of the additives themselves. (Specification, p. 1, line 28, to p. 2, line 15.)

But the Appellants succeeded where others had failed. By changing the additive to a different kind of ester--a previously unused sulfur-containing ester--the Appellants increased the efficiency of the process, got rid of the strong odors, and

^{2/} These specification citations all refer to the specification of the original application, Serial No. 06/070,503, which appears in the Appendix as Exhibit 2.

lowered the overall cost. (Specification, p. 2, lines 16-21.) The resulting halogen-containing resins (the polymers produced) better resisted shock and heat and showed an improved and more lasting color. More particularly, these low-cost additives--these previously unused esters--did not release odors when used with the metal compounds, had a favorable effect on the viscosity of the resin, and allowed good lubrication during working, which facilitated the flow of the resin. (Specification, p. 2, lines 22-30.)

In technical terms, the new additives used by the Appellants are alkyl organic esters containing a mercapto group in the alcohol residue of the ester. (Specification, p. 3, lines 5-7.) In the current claims, the additive is referred to as "a mercapto alkanol ester of a monocarboxylic acid." (Representative Claim No. 247.) Basically, the Appellants discovered that a different additive--with its sulfur atom bonded not at the acid part of monocarboxylic acid but at the alcohol part of that compound--dramatically improved the performance of tin stabilizers used for stabilizing polymers. This previously unused additive can be represented by the formula shown in the original application:



wherein R is a linear or branched alkyl or alkenyl, aryl or aralkyl containing at least two carbon atoms, preferably 6 to 38, and most preferably 8 to 18. R' designates a C₂ to C₁₈ alkylene, preferably C₂ to C₆. (Specification, page 2, lines 5-17.)

The preferred esters are derived from fatty acids--particularly caprylic, pelargonic, capric, undecanoic, lauric,

myristic, palmitic, stearic, isostearic, and mixtures of such acids. (Specification, p. 4, lines 1-6.) The residue of mercapto alcohol can be derived from various mono- or polyalcohols carrying a thiol group. (Specification p. 4, lines 16-29.)

As mentioned above, the Appellants' discovery flouted conventional wisdom. Unlike the various mercapto esters of the prior art in which the -SH function is located in the acid residue, the mercapto esters of the present invention contain the -SH function in the alcohol residue. (Specification, p. 3, lines 18-24.) The Appellants discovered that this difference of the position of the -SH surprisingly and profoundly modified the activity of the ester vis-a-vis tin stabilizers and provided remarkable efficiency without the above-noted disadvantages. (Specification, p. 3, lines 24-28.)

The use of tin stabilizers was well known in the art at the time of the Appellants' invention. To lower the cost of their use, the Appellants discovered that adding the esters of the present invention to tin compounds substantially reduces by 20% to 95% the amount of tin compounds needed compared with the use of the tin compounds alone. (Specification, p. 5, lines 4-9.) Furthermore, the new ester additives reduced the degree of discoloration of resins during heating and counteracted the increase in viscosity caused by certain tin stabilizers. (Specification, p. 6, lines 7-15.) Known tin stabilizers, when used alone, generally could not both reduce discoloration and regulate viscosity. (Specification, p. 6, lines 17-20.)

Beyond any doubt, the Appellants discovered a new additive that works exceedingly well with tin stabilizers used in the stabilization of polymers. From the specification itself as originally filed on August 28, 1979, the Appellants showed that the new additives improved the performance of two kinds of tin stabilizers: (1) sulfur-containing tin stabilizers and (2) halogen-containing tin stabilizers. In the words of that specification:

It is remarkable that these results can be obtained as well with mono- or di-organic tin derivatives, with salts of tin not containing sulfur and with those which also contain the latter with their mixtures.

(Specification, p. 6, lines 20-24.)

The "and with those which also contain the latter [referring to 'sulfur']" language shows the use of the new additive with sulfur-containing tin derivatives. Furthermore, the specification includes examples, e.g., examples 3, 4, 7 and 8, showing the addition of the ester to sulfur-containing tin derivatives. (Specification, pp. 9-14.) That same specification, with the words "with salts of tin not containing sulfur and with those which also contain the latter," supports the mixture of the additives with halogen-containing tin since a halogen-containing tin can be a salt of tin. Furthermore, the salt of tin may or may not contain sulfur; thus the halogen-containing tin may or may not contain sulfur.

As is abundantly clear from the specification of the original application, appellants' contribution to the art consisted of adding an alkylorganic ester containing a mercapto group in the alcohol residue of the ester to conventional tin stabilizer

compounds--both sulfur-containing tins and halogen-containing tins--to improve their performance in vinyl halide resins. These organotin stabilizer compounds were old, well known, and conventional. There was nothing new or magical about their use with vinyl halide resins at the time of the original application.^{3/} What was new and magical was the Appellants' invention dramatically to improve their performance in the stabilization of polymers by adding the previously unused additive--the ester with the mercapto group in the alcohol, not the acid, residue.

As will become apparent in the "Issues" and "Argument" sections below, this case involves two sets of claims, those concerned with tin compounds containing sulfur and those concerned with tin compounds containing halogen. To ease the understanding and argumentation of these issues and to distinguish between the two sets of claims, the Appellants will refer to the first set as the "sulfur-containing" claims; the second, as the "halogen-containing" claims. The Appellant will also use the following terms when referring to the tin compounds used in the invention: "sulfur-containing compounds" and "halogen-containing compounds." The reader, as a result, can more easily follow the issues and the analysis.

IV. ISSUES

- A. Does the original application disclose the Appellant's invention of adding the previously unused ester to sulfur-containing tin compounds so that Appellants are

^{3/} Attention is drawn to the forty-plus prior art documents which were submitted on November 17, 1992 which demonstrate the state-of-the-art of well-known and conventional organotin stabilizers.

entitled to rely on the August 28, 1979 filing date of the original application, thus effectively removing certain Japanese and U.S. patents as prior art?^{4/}

- B. Does the original application disclose the Appellant's invention of adding the previously unused ester to halogen-containing tin compounds so that Appellants are entitled to rely on the August 28, 1979 filing date of the original application, thus effectively removing certain Japanese and U.S. patents as prior art?
- C. Assuming the original application fails to disclose either the sulfur invention or the halogen invention, do the Appellants' affidavits show conception and reduction to practice of the sulfur and halogen inventions antedating certain Japanese and U.S. patents as prior art?
- D. Would it have been obvious to one of ordinary skill in the art at the time the invention was made, in view of the art relied upon by the Examiner, to add a mercapto alkanol ester of a monocarboxylic acid to a mono- or diorganotin compound, wherein at least one atom bonded to tin is sulfur or halogen, in amounts effective to stabilize vinyl halide resins?

V. GROUPING OF CLAIMS

The claims do not stand or fall together. The present application contains more than 100 claims, which, as noted above, the Appellants separate into two groups. Though the total number of claims exceeds 100, this relative large number merely reflects the variations in scope and type of several independent claims. The dependent claims within each group of independent claims contain very similar subject matter, mainly further defining the additive mercapto alkanol ester of a monocarboxylic acid in

^{4/} Japanese patents 55-16044 or 56-2336; Kugle U.S. Patent 4,665,114; Bresser et al. U.S. Patent 4,701,486; and Bresser et al. U.S. Patent 4,576,984. Appellants concede that if they are not entitled to rely on the August 28, 1979 filing date, then at least one of the cited references relied upon by the Examiner under 35 U.S.C. § 102 anticipates the subject matter of the claims.

accordance with pages 3 and 4 of the original application and the examples. The Appellants have simplified the Board's review of the issues by providing a representative claim for each group.

A. The Sulfur-Containing Claims

Claims 193-198, 200-207, 209-217, 219-225, 227-233, and 237-295 are directed to compositions and methods for stabilizing vinyl halide resins. Representative claim 247 recites:

A composition comprising a product produced by mixing

(1) a mono- or diorganotin compound wherein at least one atom bonded to tin is sulfur; and

(2) a mercapto alkanol ester of a monocarboxylic acid.

B. The Halogen-Containing Claims

Claims 176-183 and 296-323 are also directed to compositions and methods for stabilizing vinyl halide resins. Representative claim 296 recites:

A composition comprising a product produced by mixing

(1) a mono- or diorganotin compound wherein at least one atom bonded to tin is a halogen; and

(2) a mercapto alkanol ester of a monocarboxylic acid.

VI. ARGUMENT

A. Introduction and the Earlier Board Decision

The Examiner rejected the Appellants' claims under 35 U.S.C. § 102(a) over Japanese Patents 55-160044 or 56-2336. But these Japanese documents are not proper prior art under § 102 because the Appellants are entitled to the filing date of the

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b caus the Appellants are entitled to the filing date of the original application, August 28, 1979, which predates each of the effective dates of the Japanese documents, December 12, 1980 and January 12, 1981.^{5/}

The law in this area is well established. A continuation or continuation-in-part may use the filing date of a previously filed application under the provisions of 35 U.S.C. § 120. To satisfy the provisions of the statute, the applicant must show that the subject matter set forth in the continuing application was described with the same degree of clarity and completeness required by 35 U.S.C. § 112. Any new subject matter disclosed in the later application but not in the earlier application may not benefit from the filing date of the parent application. In re Van Langenhoven, 458 F.2d 132, 136, 173 U.S.P.Q. 426, 429 (C.C.P.A. 1972).

The CCPA articulated in In re Edwards, 568 F.2d 1349, 196 U.S.P.Q. 465 (C.C.P.A. 1978), what the written description requirement is supposed to be.

The function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him. To comply with the description requirement it is not necessary that the application describe the claimed invention *in ipisis verbis*; all that is required is that it reasonably convey to persons skilled in the art that, as of the

^{5/} The Japanese documents have the earliest effective dates of all the documents relied upon by the Examiner under § 102 (a). Furthermore, the Board specifically addressed these documents in the previous Board decision. If the Appellants are entitled to rely on the filing date of the original application, then none of the remaining references are proper prior art under § 102.

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filing date thereof, the inventor had possession of the subject matter later claimed by him.

568 F.2d at 1351-52, 196 U.S.P.Q. at 467 (citations omitted).

In the present case, then, the Board must determine whether these amended claims, as grouped above, were described in the original application so to reasonably convey to one of ordinary skill in the art that the Appellants had possession of the claimed invention. At this point, the Appellants wish to point out the previous Board decision in the prosecution history of this case. Earlier, the Examiner rejected all of the Appellants' then-pending claims on the same grounds involved in the current appeal. The Board upheld the Examiner's rejection, reasoning that the application before it, Serial No. 254,313, amplified the scope of the claims found in the original application. Specifically, the Board held that the then-pending claims broadened both the claims relating to the mercapto ester and those relating to the organotin stabilizers. (Exhibit 3 at 3.)

The then-pending mercapto ester claims, the Board held, exceeded the boundaries of the original application primarily by including the addition of optional substituents and of oxygen, carbonyl oxy, nitrogen, and sulfur in the linear hydrocarbon chain. (Exhibit 3, at 4.) The then-pending tin claims, the Board held, went beyond the original application by claiming a tin derivative with valences satisfied by elements not specifically mentioned in the original application. Id.

As will become apparent below, the Appellants have amended both the claims relating to the mercapto ester and those relating to the tin stabilizers so that they parrot what was originally

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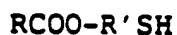
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disclosed in the original application. They are, therefore, entitled to that filing date.

- B. The original application adequately discloses the use of the currently claimed mercapto ester.

The mercapto ester currently claimed by the Appellants goes to the heart of their invention. To respond to the Board's earlier decision, the Appellants amended the now-pending claims to address the Board's concerns regarding the claimed invention. Regarding the mercapto ester used in the Appellants' invention, the now-pending claims recite the precise formula used in the original specification. As shown in Representative claim 296, the Appellants claim a composition comprising a product produced by mixing (i) the tin derivative and "(ii) a mercapto alkanol ester of a monocarboxylic acid." (Exhibit 1, at 15.) The description of the ester claimed in the now-pending claims differs not one bit from the ester originally claimed in the original application. The original specification described the mercapto ester as follows:

The new additives according to the invention are alkyl organic esters containing a mercapto group in the alcohol residue of the ester. These compounds can be represented by the general formula:



in which R is a linear or branched alkyl or alkenyl, aryl or aralkyl, containing at least two carbon atoms and preferably 6 to 38, most preferably 8 to 18, this radical also possibly carrying a second carboxylic group which may or may not be combined with a second -R'SH group; R' designates a C₂ to C₁₈ alkylene, preferably C₂ to C₆, this alkylene can advantageously also carry one or more -OH.

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The current application describes the same ester: "a mercapto alkanol ester of a monocarboxylic acid." The slight difference in language does not describe different chemical compounds but merely more distinctly describes the ester. It is well established in patent law that "an invention may be described in different ways and still be the same invention." Kennecott Corp. v. Kyocera Int'l, Inc. 835 F.2d 1419, 1422, 5 U.S.P.Q.2d 1194, 1197 (Fed. Cir. 1987).

Indeed, the ester now claimed, as claimed back then in the original application, goes to the heart of the Appellants' invention. The Appellants were the ones who discovered that the use of a different additive--a different ester--with tin stabilizers produced dramatically improved results in the making of certain polymers. That different additive, the one originally claimed and the one now claimed, has its sulfur atom bonded not to the acid part of monocarboxylic acid but to the alcohol part of that compound.

The now-pending claims contain many dependent claims. Most of them concern preferred embodiments of the esters set forth on pages 3 and 4 of the original application. Thus, there is specific support for the recitation of a mercapto alkanol ester of a monocarboxylic acid and the specific embodiments of the ester set forth in the dependent claims.

The claims of the original application make it very clear that the heart of the Appellants' invention centers around the addition of this different ester to conventional tin stabilizers. In fact, claim 1 of the original application used a Jepson-type format where the preamble stated:

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Improvement in stabilization to heat, shock
and light of resins containing a halogen, by
the addition of one or more metal compounds
.

Claim 1 then describes the incorporation of mercapto alkanol esters of monocarboxylic acids as the improvement. Again, the description back then differs not at all from the description in the now-pending claims. The Appellants, therefore, are entitled to rely on the filing date of the original application with respect to the esters now claimed.

- C. The original application adequately discloses the mixture of the currently claimed ester with sulfur-containing tin compounds.

The Appellants also responded to the Board's concerns regarding the tin stabilizers. The current claims fall into two groups shown in the "Grouping of Claims" section above. The first group claims tin stabilizers containing sulfur. The second group claims tin stabilizers containing halogens. This argument now addresses the first group: the sulfur-containing tin derivatives.

That the original application claimed sulfur-containing tin derivatives seems beyond quibble. Claim 1 of the original application was directed to the new, previously unused ester with its "mercaptan function . . . connected to a carbon atom of the alcohol residue of the ester," (Exhibit 1, Claim 1, lines 7-8), not the acid residue of the ester. This new ester, according to Claim 1, would then be mixed with "one or more metal compounds." (Exhibit 1, Claim 1, line 3.) Claim 4 then specified:

4. Improvement according to any of claims 1 to 3,
in which the metal compound is a derivative of
tin

(Exhibit 1, Claim 4, line 2.)

United States patent law requires the applicant for a patent to provide in the specification a "written description of the invention." 35 U.S.C. § 112. Complying with this provision, the Appellants included in the specification of the original application explicit support for mono- or diorganic tin derivatives with at least one sulfur atom bonded to tin, which is precisely what is claimed in the now-pending sulfur-containing claims on appeal to this Board. For instance, in the specification of the original application, at page 6, on lines 20-24, the Appellants specifically recited mono- or di-organic tin derivatives which may contain sulfur. Indeed, in the language they used, the Appellants singled out tin with sulfur as reacting in a "remarkable" way with the new, previously unused mercapto ester:

It is remarkable that these results can be obtained as well with mono- or di-organic tin derivatives, with salts of tin not containing sulfur and with those which also contain the latter with their mixtures.

(Specification, p. 6, lines 20-24 (emphasis added).)

The Appellants did not limit the description of the sulfur-containing tin compounds just to these words, however. They went further and provided examples in the specification of the original application. In those examples Appellants recite compounds having at least one sulfur atom bonded to tin just as they recite in the now-pending claims: "a mono- or diorganotin compound wherein at least one atom bonded to tin is sulfur" (Emphasis added.) For instance, Example 3 adds a mercapto alkanol ester to the

conventional di-n-octyltin bis-(isooctyl mercapto acetate), which is a sulfur-containing tin compound. (Specification, p. 8, lines 14-21.) Example 8 uses the butyltin counterpart di-n-butyltin bis-(isooctyl mercapto acetate), which is a sulfur-containing tin compound. (Specification, p. 14, lines 17-19.) Example 7 uses a mixture of an anhydride of thiobutyl stannic acid with di-n-butyltin bis-(isodecyl mercapto acetate), another sulfur-containing tin compound. (Specification, p. 12, lines 26-28.) Several examples, such as Example 4, illustrate the use of a condensation polymer of butyl stannic acid and butyl thiostannic acid, yet another sulfur-containing tin compound. (Specification, p. 9, line 28 to p. 10, line 1.)

With these disclosures firmly in mind, this Board should hold that the original application more than adequately shows that Appellants were in possession of the invention shown in the now-pending claims. Appellants claim the mixture of a unique ester with sulfur-containing tin compounds. In the original application Appellants claimed the same thing: the mixture of a unique ester with "tin derivatives." The original specification, in compliance with the requires of § 112, explicitly mentioned tin derivatives containing sulfur. The original specification went even further and gave no fewer than four specific examples, some complete with chemical formulae, of tin compounds containing sulfur. Surely this description of the invention revealed in the now-pending claims exceeds the threshold of what is required under § 112.

The Board itself, in the earlier decision, recognized precisely what the original application described. Appellants urge that what the Board there stated does nothing more than

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describ precis ly what the Appellants claim in the now-pending claims. Characterizing the original application, the Board used these words:

The parent application, Serial No. 070,503, describes the mono- and diorgano derivatives of tetravalent tin with or without sulfur

(Exhibit 3, p. 3, lines 20-22.)

Perhaps the detail of the Board's concerns with the Appellants' previous claims overly influenced the Examiner when she rejected the now-pending claims of mixing the unique ester with sulfur-containing tin derivatives. But the now-pending claims have addressed those concerns. The claims grouped under Group I--the sulfur-containing tin compounds--no longer describe, in the words of the earlier Board decision, tin derivatives with their "remaining valences . . . satisfied by halogen and phosphorus" (Exhibit 3, p. 4, lines 7-8.) Instead, the now-pending claims grouped under Group I claim only the mixture of the unique ester with sulfur-containing tin derivatives. That's what the original application described. That's what the Board, in the earlier decision, said that the earlier application described. And that's what the now-pending claims do indeed describe.

- D. The original application adequately discloses the mixture of the currently claimed ester with halogen-containing tin compounds.

Appellants readily concede that support for halogen-containing tin compounds in the original application becomes a bit more problematical. But there is implicit support for mono- or diorgano tin derivatives with at least one atom bonded to tin

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being a halogen. The specification of the original application describes conventional metal and tin stabilizer compounds. Halogen-tin compounds were well-known compounds at the time of the original application and fall within the scope of the well-known mono-and di-organic tin compounds contemplated by the inventors. One of ordinary skill in the art would know that halogen-containing tin compounds were among those being described in the original specification.

The language of the original specification pointed directly to "salts of tin not containing sulfur" and "those which also contain the latter." (Specification, p. 6, lines 20-24.) It was well known in the art of the day that one group of "salts of tin" were the halogen-containing tin derivatives. As one of ordinary skill in the art would readily agree, salts are often formed using halogens.

The prior art supports the Appellants' position that organotin halides were well known conventional compounds which would fall within the scope of the Appellants' claims. U.S. Patents 3,630,992, 3,758,536, 3,665,025, 3,925,309 and Great Britain 1,117,652, recited in the Supplemental Declaration of M. Foure filed August 9, 1984 (Exhibit 5) provide a sample of the state of the art of halogen-containing organotin compounds, with and without sulfur.

The Appellants, therefore, are entitled to rely on the filing date of the original application with respect to the halogen-containing organotin stabilizers now claimed.

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- E. Even if the Board holds that the original application does not adequately describe the invention of the now-pending claims, the declarations introduced in the prosecution show a date of invention and reduction to practice before the dates of the Japanese and U.S. references.

The heart of the Appellants' invention remains the first-ever use in the stabilization of polymers of the mercapto ester with its sulfur atom bonded not at the acid residue of the compound but at the alcohol residue of that compound. According to the now-pending claims, that previously unused ester is added to two broad types of tin derivatives: sulfur-containing tin derivatives and halogen-containing tin derivatives. If we assume (but the Appellants do not admit) that the original application fails to describe these two groups of tin derivatives such that the Japanese and U.S. references intercede to deny the Appellants the patentability of their now-pending claims, the Appellants prevail in any event because their Rule 131 showing by Michael Foure establishes a date of invention and reduction before the Japanese and U.S. references.

Under well-established patent law, a Rule 131 showing will remove intervening references in one of two ways: (1) when the showing is commensurate with the reference or (2) when the showing renders the claimed invention obvious. The "commensurate" test was best demonstrated in the case of In re Stempel, 241 F.2d 755, 113 U.S.P.Q. 77 (C.C.P.A. 1957), the "obvious" test in In re Stryker, 435 F.2d 1340, 168 U.S.P.Q. 372 (C.C.P.A. 1971) and In re Spiller, 500 F.2d 1170, 182 U.S.P.Q. 614 (C.C.P.A. 1974). Because the Japanese and U.S. references in the current case go beyond the Appellants' now-pending claims and the Appellants' showing in the

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Four affidavits, the controlling principle is not the "commensurate" test of Stempel but the "obviousness" test of Spiller.

In Spiller, the heart of the inventor's invention lay in manufacturing cellulosic sheet material such as paper and coating the surface of the paper with starch to improve its surface properties. At the time, it was well known in the art that starch improved the surface of paper. The invention simply devised a new way getting the starch onto the surface. The invention accomplished the coating by electrically grounding wet paper and electrostatically charging dry particles suspended in the atmosphere surrounding a water-wet web of paper. Unfortunately for the inventor, another reference claimed the same process, further specifying the precise water content of the paper, the type of machine used in the paper-manufacturing process, and various other particulars. To antedate this reference, the inventor introduced his notebook and a portion of a letter from his attorney describing the invention. The evidence neither established the percentage content nor the machine used in the paper-making industry specifically designated by the intervening reference. All it did was establish the way the starch was added to wet paper; the attorney's letter, without mentioning the precise machine, only stated that the invention related to the "paper-making process." The Board rejected this showing as insufficient to remove the intervening references.

On appeal, the Court of Customs and Patent Appeals reversed the Board's decision and held the showing sufficient to antedate and thereby remove the intervening reference. In the words of the court:

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[I]t is sufficient that applicant has shown a reduction to practice of his basic invention, which showing will also suffice as to claims differing therefrom only in details which are obvious to one of ordinary skill in the art.

The heart of this invention is clearly the use of electrostatic forces to apply dry starch particles to a wet paper web. The differences which exist between the claimed invention and the specific reduction to practice established by the Rule 131 showing are such as would be obvious to one of ordinary skill in this art.

500 F.2d at 1178, 182 U.S.P.Q. at 620. Referring directly to the Stryker decision, the Spiller court made it clear that the "obviousness" test goes to the "differences" between what the "affidavits" and the "reference" showed and what the claimed invention showed:

Many dependent claims also raise the question whether the situation in Stryker, where the differences between the claimed invention and what the reference and affidavits showed were "so small as to render the claims obvious" to one skilled in the art in view of a single reference, ought to be extended to a situation where part or all of the differences are rendered obvious, not merely by the knowledge of one skilled in the art but by other references available as of the date of the alleged reduction to practice.

500 F.2d at 1176-77, 182 U.S.P.Q. at 619.

In the present case, there is virtually no difference between the now-pending claims and the Rule 131 showing. The analysis, then, must focus on the differences between the Rule 131 showing and the intervening Japanese and U.S. references. That analysis must necessarily begin with a look at the affidavit evidence itself.

On April 15, 1981, the Appellants filed the "Affidavit of Michael Foure Under Rule 37 CFR 1.131." Exhibit 4. The affidavit

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recounted a series of experiments that Michael Foure performed for the Appellants "prior to December 12, 1980."^{6/} The experiment was described in the affidavit as follows:

Four stabilizer compositions were prepared, each containing a mono-organo derivative of tetravalent tin where the remaining valences of the tin atom are satisfied by bonds to halogen or to halogen and sulfur. These compositions also contained a mercaptoloweralkanol ester of a carboxylic acid. Each of the four stabilizer compositions was evaluated as a stabilizer for vinyl halide polymers; a commercially available stabilizer was used as a control. [Emphasis added.]

The Rule 131 showing discloses the adding of the previously unused mercapto acid ester both to sulfur-containing tin compounds and to halogen-containing tin compounds. As noted above, there are no discernible differences between this showing and the two groups of now-pending claims. The "obviousness" test of Spiller, therefore, must relate to the differences between the Rule 131 showing and the intervening Japanese and U.S. references.

The Appellants wish to note that the earlier Board decision found the Foure Affidavit inadequate vis-a-vis the then-pending claims. The Board found that the Foure Affidavit was not commensurate with the Japanese reference disclosures. The Board then considered the obviousness of the differences between what was shown in the Affidavit and what is claimed because possession of what is shown carries with it possession of variations and adaptations that would at the same time be obvious to one of

^{6/} The Four affidavit is fully corroborated by the declarations of Jean-Claud Mendelsohn and Jean Yves Chenard filed on August 9, 1984. (Exhibit 7.) These declarations affirm that the generic invention was conceived and reduced to practice prior to the filing date of the original application.

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ordinary skill in the art. In re Spiller, 500 F.2d 1170, 182 U.S.P.Q. 614.

The Board ruled that Appellants did not sustain their burden of going forward with an allegation that the organotin derivatives in the affidavit would have rendered obvious the other organotin derivatives claimed. The Board did not consider the record and brief to clearly state that the showing of organo tin derivatives having their remaining valences satisfied by bonds to sulfur, halogen, and mercapto acid ester would have rendered the claimed invention obvious.

But the now-pending claims do not recite the compounds considered by the Board. Even with the new claims, Appellants concede that the Foure Affidavit only shows part of what the Japanese and U.S. references disclose, and thus would not remove the references by the standard set forth in In re Stempel, 241 F.2d 755, 113 U.S.P.Q. 77. However, Appellants are entitled to the present claims under the principles of In re Spiller, 500 F.2d 1170, 182 U.S.P.Q. 614, because variations and adaptations of what is shown in the Foure Affidavit would have been obvious to one of ordinary skill in the art at the time of the original application.

The Foure Affidavit describes several experiments supporting the claimed invention that were conducted in the U.S. prior to the effective dates of the Japanese documents. In his Affidavit, Foure used monobutyltin (isooctylmercaptoacetate)sulfide in Stabilizers A and C. This compound, along with the dioctyltin bis(isooctyl mercaptoacetate) of Appellants' Example 3, are specifically identified, for example, on pages 3 and 4 of the English translation of Japanese document 160,044.

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The remaining organotin mercaptocarboxylates, organotin mercaptocarboxylate halides and organotin mercaptocarboxylate sulfides disclosed in the Japanese documents are simply obvious and well-known variants of the organotin compounds of the original application and the Foure Affidavit described above. Under the provisions of In re Spiller, Appellants are entitled to a claim covering these obvious variants.

The prior art confirms that the organotin compounds of the Japanese documents are obvious and well-known variants. For instance, U.S. Patent 3,655,613 generally describes organotin mercapto carboxylate stabilizers and specifically describes, *inter alia*, dioctyltin bis(isooctyl mercaptoacetate) and dimethyl tin bis(isooctyl mercaptoacetate), which two compounds are also listed on page 3 of the Japanese translation. U.S. Patent 4,062,881 describes monoorgano or diorganotin mercaptoalkyl carboxylates and monoorgano tin and diorganotin mercapto alkyl carboxylic acid ester sulfides, which are the same or similar to those described on page 4 of the Japanese translation. U.S. Patent 3,665,025 describes monohalide tin mercapto derivatives such as those mentioned on page 4 of the Japanese translation. U.S. Patent 3,630,992 describes halogen- and nonhalogen- containing organotin thio carboxylates.^{7/}

Not only is there sufficient support in the specification of the original application for the sulfur-containing compounds, it is also vident that th sulfur-containing organotin stabilizers

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^{7/} These patents were cited in the Supplemental Declaration of M. Foure.

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described in the Japanese document were very well known in the art and would have been considered obvious variants of one another.

The claims of halogen-containing tin compounds are equally obvious variants. These Group II claims recite mono- or diorganotin compounds wherein at least one atom bonded to tin is a halogen. These compounds are simply obvious variations and adaptations of known tin compounds.

The Fouré Affidavit shows experiments conducted in the U.S. in which mono- or diorganotin compounds containing at least one halogen bonded to tin were combined with mercapto alkanol esters of monocarboxylic acid. Although the Fouré Affidavit makes no specific reference to the organotin (mercapto acid ester) halide compounds of the Japanese references, it does demonstrate halogen-containing tin stabilizers with and without sulfur. This demonstration along with the knowledge of one of ordinary skill in the art based on the prior art patents discussed above, provides sufficient evidence that Appellants possessed the invention of mixing the previously unused ester with halogen-containing tin stabilizers with and without sulfur, including those presented in the Japanese documents. The Fouré Affidavit clearly shows a reduction to practice earlier than the Japanese references publication dates.

Furthermore, U.S. Patents 3,630,992, 3,758,536, 3,665,025 and Great Britain 1,117,652, recited in the Supplemental Declaration of M. Fouré filed August 9, 1984 (Exhibit 5), provide a sample of the state of the art of halogen-containing organotin compounds that include sulfur-tin-halide compounds. Halogen-containing tin compounds without sulfur bonded to tin were also well recognized

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stabilizers such as in U.S. Patent 3,925,309, col. 1, line 46 et seq. Thus, these tin-halide compounds, whether containing sulfur or not, were well known in the art and would have been considered obvious variants of each other.^{8/}

In conclusion, using the earlier Board's analysis, this Board should hold that the affidavit evidence previously submitted effectively removes the Japanese references for the present claims. The experiments conducted by Mr. Foure in his Affidavit in view of the examples in the original application, the Supplemental Declaration of M. Foure, and the prior art clearly show enough to render the claimed invention obvious in accordance with the provisions of In re Spiller.

F. The Examiner improperly relied on the disclosures of Japanese patents and the U.S. Patents.

The Examiner seemed influenced by the degree of specificity the Japanese references and the U.S. Patents use to describe each stabilizer, i.e., organotin and mercapto ester. They indeed are far more numerous than the two species set forth in the Appellants' original application. The two Japanese documents do disclose a multitude of species, and the Examiner appears to rely on these disclosures to justify the alleged inadequate support of the original application. But this reliance is not proper since a later existing state of the art cannot be used to

^{8/} As discussed earlier, the Mendelsohn and Chenard declarations corroborate the Foure affidavit. Furthermore, the declarations of Philip E. Rakita and William A. Larkin also filed on August 9, 1984, (Exhibit 7) affirm applicants' position that halogen-containing organic tin compounds were well known stabilizers in the art.

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test for compliance with § 112, first paragraph. Such reliance "would not only preclude the grant of broad claims, but would wreak havoc in other ways as well." In re Hogan, 559 F.2d 595, 606, 194 U.S.P.Q. 527, 538 (C.C.P.A. 1977).

Furthermore, the expanded number of species in a CIP application (Serial No. 254,313) cannot be used to limit the use of the generic term of the original application because only a few species were recited in the original application. In a case paralleling In re Hogan, the court held that the disclosure of specifics [in a CIP application] adds to the understanding one skilled in the art would glean from a generic term, but it does not follow that such added disclosure limits the meaning of the generic term. In re Koller, 613 F.2d 819, 823, 204 U.S.P.Q. 702, 705 (C.C.P.A. 1980).

The original application fully complies with the written description requirement under §112 as discussed earlier and the Examiner's reliance on the Japanese documents to the contrary would, in the words of the court, wreak havoc.

G. The remaining patents cited by the Examiner under § 102 are not proper prior art.

The Examiner rejects claims 176, 183, 237-246, 247-254, 261-272, 279-287, and 295 under 35 U.S.C. § 102(a) as being fully met by Kugele (114), filing date, February 26, 1981. The Examiner rejects claims 193-198 and 237-295 under 35 U.S.C. § 102(a) as being fully met by Bresser et al. (486), filing date, February 26, 1981. The Examiner rejects claims 193, 198, and 237-295 under 35 U.S.C. § 102(a) as being fully met by Bresser et al. (984), filing date, February 26, 1981). All of the filing dates of these

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patents are subsequent to the effective dates of the Japanese documents, December 12, 1980 and January 12, 1981. Since Appellants are entitled to the August 28, 1979 filing date of the original application for all the reasons discussed above, Kugele, Bresser (486) and Bresser (984), like the Japanese documents, are not prior art under 35 U.S.C. § 102.

Furthermore, in each of the rejections over Kugele, Bresser (486) and Bresser (984), the Examiner impermissibly relies on the disclosure of the patents to determine the sufficiency of the disclosure of the original application. This reliance is clearly improper. See In re Hogan, 559 F.2d at 605, 194 U.S.P.Q. at 537.

Appellants were the first to discover that the addition of a mercaptan-containing organic compound to an organotin stabilizer having a Sn-S or Sn-halogen bond improved the stabilization of vinyl halide resins. Appellants therefore deserve broad claims to this broad concept. The fact that the later filed references may provide more examples than Appellants should not preclude Appellants from getting protection of their invention. Appellants need not provide examples of every possible combination as the Examiner appears to require.

Since Appellants are entitled to the filing date of the original application, Kugele, Bresser (486) and Bresser (984) are not prior art under 35 U.S.C. § 102.

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H. Gough in view of Stapfer, Hechenbleikner et al. (129 and 527), Wowk, Schroeder et al., Weinberg et al. (750), and Kauder et al. (915) does not render the claimed invention obvious.

The Examiner rejects claims 176-183, 193-198, 200-207, 209-217, 219-225, 227-233, and 237-323 under 35 U.S.C. § 103 over Gough et al. in view of Stapfer, Hechenbleikner et al. (129 and 527), Wowk, Schroeder et al., Weinberg et al. (750), and Kauder et al. (915).

Gough teaches a synergistic stabilizer composition comprising an organotin borate and an organic thiol for use with polyvinyl chloride resins. Since both components in a synergistic combination are essential to the unique synergistic relationship, there would have been no motivation to one of ordinary skill in the art to substitute other compounds in Gough and possibly destroy the synergism. Furthermore, there are no teachings that organotin borates and organotin compounds having at least one sulfur or halogen bonded to tin are equivalent compounds; thus there is again no motivation to substitute the organotin borates.

The Examiner alleges that Appellants' statement at page 3 of the specification "[i]n general, when the prior art additive contains a mercaptan function, the sulphur atom is always located in the acid residue" is clearly erroneous since the species 2-thioethyl octanoate of Gough contains the -SH radical in the alcohol-derived portion. The Examiner is misconstruing the statement. The first part of the first paragraph on page 3 describes various prior art documents including Gough. The quoted statement above pertains to a general description of the prior art as evidenced by the opening words, "in general."

Appellants go on to stat , "[T]he location of the mercapto group has a significant effect upon performance with respect to stabilization." Gough describes a variety of organic thiols as evidenced by formulas (d), (e), (f), and (g), but nowhere describes that the location of the mercapto group affects stabilization. Thus, even if Gough describes compounds having the -SH radical in the alcohol-derived portion, there is no teaching that these compounds provide better results over compounds having -SH radicals in the acid residue. For instance, the esters of the present invention do not have the volatility and odor associated with prior art sulfur compounds, are inexpensive, and have good viscosity and lubrication qualities. See page 2, second and third paragraphs, of the original application.

The Examiner claims that Gough teaches that both dynamics and static instabilities are ameliorated by the combination. The Examiner recognizes that Gough uses an organotin borate co-stabilizer but asserts that comparative example 7 containing dimethyl tin bis(isooctyl thioglycolate) (DMTBOT) shows that relative to the absence of stabilizers (example 12) or merely a mercapto acid ester's presence (example 16), use of another organotin compound (within appellants' claimed organotin compounds) gives superior stability.

Appellants always maintained that the organotin compounds used in the claimed invention were well known in the art. Gough merely recognizes this fact by using DMTBOT in a comparative example. Since DMTBOT was a known stabilizer, the fact that it improved the stability of PVC over PVC with out a stabilizer would have been expected. Gough at no point teaches or suggests the

combination of this organotin compound with the mercapto alkanol ester. Nor does Gough teach or suggest that the DMTBOT is equivalent to organotin borates.

The Examiner supports her position by stating that the compound's stabilizing effect is even greater than that afforded by the organotin borate and that it would be reasonable to expect that the superior tin stabilizer, DMTBOT, would experience some enhancement in its stabilizing performance by supplementation with the same class of mercapto compounds having the mercapto radical in the alcohol-derived portion of the molecule. The Examiner basically contends that Appellants have not shown why the routineer in this art would not expect the superior tin stabilizer to be similarly benefitted by the mercapto compound's presence.

On the contrary, Appellants have demonstrated that the routineer in the art would not have modified Gough based on the teachings of Gough. Gough was perfectly aware of organotin compounds other than organotin borates. (See column 1, lines 44-66 of Gough.) Gough, however, did not even combine DMTBOT with the octylthioglycolate used in the examples, let alone any other mercapto compounds. Gough's advancement to the art of PVC stabilization was the synergistic combination of an organo borate and an organic thiol. Since Gough described what he believed to be the state of the art at the time of the present invention, and Gough did not use any organotin compound other than organotin-borates, Gough clearly did not contemplate the use of organotin compounds other than organotin borates. The suggestion to modify the prior art must come from the prior art and not from the hindsight knowledge afforded by the claimed invention. There is

simply no teaching or suggestion provided by Gough to combine DMTBOT with any mercapto compound having the mercapto radical in the alcohol-derived portion of the molecule. Both the suggestion to combine the references and the reasonable expectation of success must be found in the prior art. In re Vaeck, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

The Examiner then considers Gough's thiol-containing anti-oxidant's use to enhance the organotin borate's performance is an extension of the teachings of Stapfer and the Hechenbleikner patents, that sulfur-containing compounds synergistically extend the heat stability of organotin compounds inclusive of the alkyl and alkylthio-stannic acids, known alternative stabilizers to the organotin mercapto acid esters.

Stapfer describes the use of organic divalent sulfur compounds as stabilizers for PVC. The organic divalent sulfur compounds (mercaptols, mercaptals, thioanhydrides, or acyl mercaptols) of Stapfer are different from the mercapto alkanol ester of a monocarboxylic acid of the claimed invention. In fact, the Fourre Declaration under 35 U.S.C. § 132, filed in CIP Application, demonstrates that thiollaureic anhydride of Stapfer results in poorer performance than the claimed mercapto esters of the claimed invention.

Stapfer does not teach or suggest organotin borates. Thus, Stapfer provides no motivation to substitute the organotin compounds of Appellants' claimed invention for the organotin borates of Gough. One of ordinary skill in the art would not have modified Gough to arrive at the claimed invention in view of Stapfer.

The Hechenbleikner patents disclose a mixture of a tin stabilizer and a non-tin-containing sulfur compound selected from a liquid polythiopolymercaptan and an alkylene glycol derivative. The non-tin-containing sulfur compounds are not the claimed mercapto alkanol ester of a monocarboxylic acid. There is no mention of an organotin borate and organotin sulfur or halogen compounds. Thus, nothing in Hechenbleikner would have led one of ordinary skill in the art to replace Gough's organotin borate stabilizer with an organotin sulfur stabilizer from Hechenbleikner.

The Examiner states that Kauder's sulfides are the sulfide analogues of Appellants' same generic formula when $Z=S$ on page 16 of the application. Appellants are not claiming that they discovered the sulfide compounds of the present invention. They are claiming the addition of a mercapto alkanol ester of a monocarboxylic acid to an organotin stabilizer. Kauder does not teach or suggest this combination and thus provides no motivation to modify Gough.

The Examiner contends that the organotin halide compounds of Wowk and Schroeder, encompassed within Appellants' Sn-halide definition, are also known organotin heat stabilizers for PVC, which performance would be expectedly enhanced by the Gough's thiol compounds presence. Again the Examiner is using hindsight construction to obtain Appellants' claimed invention. Appellants have always maintained that the organotin stabilizers were known in the art. Wowk and Schroeder do not add anything beyond what Appellants' have stated. There is absolutely no motivation provided by these documents to modify Gough. There is no equivalence

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taught between the organotin borates of Gough and the organotin stabilizers of Wowk and Schroeder.

Out of all the documents cited during this prosecution, including the forty-plus documents cited by Appellants and Wowk, Schroeder, Kauder, Hechenbleikner, and Weinberg, not one teaches the equivalence of organotin borates with organotin compounds of the present invention. Thus, there is simply no motivation to substitute the organotin borate with another organotin compound. In fact, Gough teaches away from such a substitution by discussing alternative stabilizers, including organotin mercaptides, and then dismissing them. (See column 1, lines 44-66.) Furthermore, the synergistic combination of Gough would not have directed one of ordinary skill in the art to modify Gough to include stabilizers other than organotin borate.

The Examiner states that Appellants in the CIP application attempted for the first time to document alleged unexpected results as compared to the alkanol-derived mercapto acid ester's use. The Examiner considers this data ambiguous and too limited. In summary, the Examiner points out an inconsistency in the specification in that the text indicates a discoloration time of 10 minutes for the stearyl mercapto acetate but the Table indicates 20 minutes. Regardless of which time is correct, the 2-mercaptoethyl stearate, which is within the claimed invention, discolored after 25 minutes. This example supports Appellants' claimed utility.

The Examiner also considers the above inconsistency to render dubious all the data given. There is no basis for the Examiner's

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position. Such a typographical mistake does not cast doubt on all the data.

The Examiner states that this single comparison is too limited to support unobviousness given the broad genus of both type of mercapto-containing acid esters and numerous enumerated species within each genus, which Gough synthesizes. First, Appellants need not show unexpected results to overcome the rejection over Gough because the Examiner has simply not provided a *prima facie* case of obviousness. Second, Appellants submitted a Declaration of M. Foure under 37 CFR 1.132 providing a number of comparisons of compositions of the present invention with those of Gough and Stapfer. There is more than a single comparison.

In summation, Gough discusses the synergistic combination of mercapto alkanol esters to organotin borates for the stabilization of vinyl halide resins. Gough does not contain any teaching or suggestion to use any organotin compounds except for organotin borates and therefore does not teach or suggest the claimed invention. None of the secondary references remedy the deficiencies of Gough.

Appellants are entitled to exclude the organotin borates from the claimed invention. There is no evidence that the organotin borates as set forth in Gough are equivalent to the organotin compounds of the present invention. Furthermore, Appellants are not aware of any art that would motivate one of ordinary skill in the art to substitute a tin stabilizer as claimed in the present invention for the organotin borate of Gough.

In view of the above, the Board is respectfully requested to reverse the Examiner's § 103 rejection.

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VII. CONCLUSION

For all of the foregoing reasons, Appellants respectfully request that the Board reverse the Examiner's rejections and indicate that claims 116-183, 193-198, 200-207, 209-217, 219-225, 227-233, and 237-323 are allowable.

Respectfully submitted,

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Dated: May 13, 1994